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SPACE OPERATIONS CONTROL CENTER

SATELLITE SITUATION REPORT

VOL. 4, NO. 20

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GODDARD SPACE FLIGHT CENTER

GREENBELT, MD.

SPACE OPERATIONS CONTROL CENTER
GODDARD SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

VOLUME 4 NO. 20

OCTOBER 31, 1964

SATELLITE SITUATION REPORT

THE FOLLOWING REPORT REFLECTS DATA COMPUTED AND COMPILED BY
THE GODDARD SPACE FLIGHT CENTER, NORAD, AND SMITHSONIAN ASTROPHICAL
OBSERVATORY AS OF 1200Z ON OCTOBER 31, 1964.

OBJECTS IN ORBIT

<u>OBJECT</u>	<u>CODE NAME</u>	<u>CATALOGUE NUMBER</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>NODAL PERIOD</u>	<u>INCLI- NATION</u>	<u>APOGEE Km.</u>	<u>PERIGEE Km.</u>	<u>TRANSMITTING FREQ. (MC/S)</u>
1958 LAUNCHES									
ALPHA 1	EXPLORER 1	004	US	1 FEB	104.5	33.19	1593	341	
BETA 1	ROCKET BODY	016	US	17 MAR	138.4	34.24	4328	641	
BETA 2	VANGUARD 1	005	US	17 MAR	134.0	34.23	3945	643	108.012 &
1959 LAUNCHES									
ALPHA 1	VANGUARD 2	011	US	17 FEB	125.4	32.89	3284	557	
ALPHA 2	ROCKET BODY	012	US	17 FEB	129.7	32.93	3658	556	
ETA 1	VANGUARD 3	020	US	18 SEP	129.8	33.33	3715	513	
MU 1	LUNIK 1	112	USSR	2 JAN	HELIOCENTRIC ORBIT				
NU 1	PIONEER 4	113	US	3 MAR	HELIOCENTRIC ORBIT				
IOTA 1	EXPLORER 7	022	US	13 OCT	101.1	50.32	1062	564	
IOTA 2	ROCKET BODY	023	US	13 OCT	100.9	50.29	1051	552	
1960 LAUNCHES									
ALPHA 1	PIONEER 5	027	US	11 MAR	HELIOCENTRIC ORBIT				
BETA 1	ROCKET BODY	028	US	1 APR	99.1	48.40	737	694	
BETA 2	TIROS 1	029	US	1 APR	99.2	48.40	742	697	
BETA 3	NONE	101	US	1 APR	97.9	48.49	700	613	
BETA 4	NONE	115	US	1 APR	99.9	48.16	799	706	
GAMMA 2	TRANSIT 1B	031	US	13 APR	93.9	51.24	577	349	
GAMMA 4	NONE	099	US	13 APR	96.7	51.27	724	480	
EPSILON 3	NONE	036	USSR	15 MAY	90.9	64.97	374	265	
ZETA 1	MIDAS 2	043	US	24 MAY	94.3	33.04	497	469	
ETA 1	TRANSIT 2A	045	US	22 JUN	101.6	66.72	1060	611	
ETA 2	GREB	046	US	22 JUN	101.6	66.72	1059	610	
ETA 3	ROCKET BODY	047	US	22 JUN	101.4	66.70	1037	613	
ETA 4		840	US	22 JUN	101.5	66.70	1055	609	
ETA 5		841	US	22 JUN	101.5	66.69	1051	610	

OBJECTS IN ORBIT

<u>OBJECT</u>	<u>CODE NAME</u>	<u>CATALOGUE NUMBER</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>NODAL PERIOD</u>	<u>INCLI- NATION</u>	<u>APOGEE Km.</u>	<u>PERIGEE Km.</u>	<u>TRANSMITTING FREQ. (MC/S)</u>
1960 LAUNCHES (CONT'D)									
IOTA 1	ECHO 1	049	US	12 AUG	114.1	47.27	1666	1167	
IOTA 2	ROCKET BODY	050	US	12 AUG	118.1	47.25	1687	1499	
IOTA 3	METAL OBJECT	051	US	12 AUG	118.2	47.28	1684	1518	
IOTA 4	METAL OBJECT	052	US	12 AUG	CURRENT ELEMENTS NOT MAINTAINED				
IOTA 5	METAL OBJECT	053	US	12 AUG	118.4	47.31	1689	1531	
NU 1	COURIER 1B	058	US	4 OCT	107.0	28.30	1209	966	
NU 2	ROCKET BODY	059	US	4 OCT	106.6	28.24	1211	920	
XI 1	EXPLORER 8	060	US	3 NOV	112.3	49.93	2246	419	
XI 2	ROCKET BODY	062	US	3 NOV	111.9	49.94	2207	417	
XI 3	NONE	069	US	3 NOV	109.2	49.38	1974	401	
XI 4	NONE	105	US	3 NOV	110.5	50.49	2077	419	
PI 1	TIROS 2	063	US	23 NOV	98.2	48.51	735	613	
PI 2	ROCKET BODY	064	US	23 NOV	98.1	48.51	731	603	
PI 3	NONE	074	US	23 NOV	98.2	48.53	715	625	
PI 4	NONE	075	US	23 NOV	98.3	48.51	719	634	
1961 LAUNCHES									
ALPHA 1	SAMOS 2	070	US	31 JAN	94.7	97.41	544	468	
ALPHA 2	METAL OBJECT	079	US	31 JAN	94.6	97.40	542	462	
GAMMA 1	VENUS PROBE	080	USSR	12 FEB	HELIOCENTRIC ORBIT				
DELTA 2	ROCKET BODY	082	US	16 FEB	118.5	38.86	2599	628	
DELTA 3	NONE	085	US	16 FEB	CURRENT ELEMENTS NOT MAINTAINED				
KAPPA 1	EXPLORER 10	098	US	25 MAR	POSITION UNCERTAIN				
NU 1	EXPLORER 11	107	US	27 APR	107.9	28.77	1771	488	
OMICRON 1	TRANSIT 4A	116	US	29 JUN	103.8	66.83	999	880	150;400
OMICRON 2	INJUN-SR-3	117	US	29 JUN	103.8	66.83	1001	879	
OMICRON 3-206**	METAL OBJECTS		US	29 JUN					
RHO 1	TIROS 3	162	US	12 JUL	100.4	47.92	823	732	

OBJECTS IN ORBIT					CATALOGUE				
OBJECT	CODE NAME	NUMBER	SOURCE	LAUNCH	NODAL PERIOD	INCLINATION	APOGEE Km.	PERIGEE Km.	TRANSMITTING FREQ. (MC/S)
1961 LAUNCHES (CONT'D)									
RHO 2	ROCKET BODY	165	US	12 JUL	100.3	47.90	813	735	
RHO 3	METAL OBJECT	166	US	12 JUL	98.8	47.94	803	603	
RHO 4	METAL OBJECT	167	US	12 JUL	102.0	47.85	931	774	
SIGMA 1	MIDAS 3	163	US	12 JUL	161.5	91.22	3593	3298	
SIGMA 3	METAL OBJECT	188	US	12 JUL	161.1	91.21	3560	3303	
SIGMA 4	METAL OBJECT	196	US	12 JUL	161.9	91.21	3579	3345	
UPSILON 1	EXPLORER 12	170	US	16 AUG	CURRENT ELEMENTS NOT MAINTAINED				
A DELTA 1	MIDAS 4	192	US	21 OCT	166.0	95.90	3745	3508	
A DELTA 3	METAL OBJECT	194	US	21 OCT	165.6	95.82	3728	3493	
A DELTA 4	METAL OBJECT	195	US	21 OCT	166.4	95.85	3789	3498	
A ETA 1	TRANSIT 4B	202	US	15 NOV	105.8	32.43	1098	961	
A ETA 2	TRAAC	205	US	15 NOV	105.8	32.40	1108	953	
A ETA 3	ROCKET BODY	204	US	15 NOV	105.6	32.43	1106	939	
1962 LAUNCHES									
ALPHA 1	RANGER 3	221	US	26 JAN	HELIOCENTRIC ORBIT				
ALPHA 2	ROCKET BODY	222	US	26 JAN	HELIOCENTRIC ORBIT				
BETA 1	TIROS 4	226	US	8 FEB	100.4	48.32	845	706	
BETA 2	ROCKET BODY	227	US	8 FEB	101.4	48.14	939	706	
BETA 3	METAL OBJECT	228	US	8 FEB	99.5	48.42	766	700	
BETA 4	METAL OBJECT	229	US	8 FEB	100.3	48.30	838	707	
ZETA 1	ORB.SOL.OBS. 1	255	US	7 MAR	96.0	32.83	586	548	
ZETA 2	ROCKET BODY	257	US	7 MAR	96.0	32.84	598	534	
KAPPA 1		271	US	9 APR	153.0	86.67	3412	2785	
KAPPA 3		273	US	9 APR	152.6	86.68	3368	2798	
KAPPA 4		274	US	9 APR	153.3	86.68	3424	2802	
MU 2	ROCKET BODY	282	US	23 APR	HELIOCENTRIC ORBIT				
OMICRON 1	ARIEL 1	285	US/UK	26 APR	100.5	53.88	1175	390	136.406
OMICRON 2	ROCKET BODY	288	US/UK	26 APR	100.4	53.89	1162	393	

OBJECT	CODE NAME	CATALOGUE NUMBER	OBJECTS IN ORBIT				INCLI- NATION	APOGEE Km.	PERIGEE Km.	TRANSMITTING FREQ. (MC/S)
			SOURCE	LAUNCH	NODAL PERIOD					
1962 LAUNCHES (CONT'D)										
A ALPHA 1	TIROS 5	309	US	19 JUN	100.5	58.11	974	588		
A ALPHA 2	ROCKET BODY	311	US	19 JUN	100.4	58.10	962	592		
A ALPHA 3	METAL OBJECT	312	US	19 JUN	101.7	58.21	1087	596		
A ALPHA 4	METAL OBJECT	313	US	19 JUN	99.1	57.99	861	571		
A EPSILON 1	TELSTAR 1	340	US	10 JUL	157.8	44.80	5642	945		
A EPSILON 2	ROCKET BODY	341	US	10 JUL	157.6	44.82	5628	946		
A OMICRON 1		369	US	23 AUG	99.5	98.71	855	619		
A OMICRON 2		370	US	23 AUG	98.2	98.62	748	603		
A OMICRON 3		378	US	23 AUG	100.8	98.73	975	620		
A OMICRON 4		388	US	23 AUG	99.5	98.71	857	622		
A RHO 1	MARINER	374	US	27 AUG	HELIOCENTRIC ORBIT					
A RHO 2	ROCKET BODY	375	US	27 AUG	HELIOCENTRIC ORBIT					
A PSI 1	TIROS 6	397	US	18 SEP	98.7	58.32	710	687		
A PSI 2	ROCKET BODY	398	US	18 SEP	98.7	58.32	707	683		
A PSI 3	METAL OBJECT	399	US	18 SEP	99.4	58.43	765	693		
A PSI 4	METAL OBJECT	400	US	18 SEP	98.0	58.20	687	642		
B ALPHA 1	ALOUETTE	424	CANADA	29 SEP	105.5	80.47	1035	1000		\$136.593
B ALPHA 2	ROCKET BODY	426	US	29 SEP	105.4	80.48	1027	1003		\$136.593
B ALPHA 3	METAL OBJECT	510	US	29 SEP	105.4	80.51	1025	1000		
B ALPHA 4	METAL OBJECT	511	US	29 SEP	105.5	80.44	1046	990		
B GAMMA 1	EXPLORER 14	432	US	2 OCT	CURRENT ELEMENTS NOT MAINTAINED					
B GAMMA 2#	ROCKET BODY	NNA	US	2 OCT	CURRENT ELEMENTS NOT MAINTAINED					
B ETA 1	RANGER 5	439	US	18 OCT	HELIOCENTRIC ORBIT					
B ETA 2	ROCKET BODY	440	US	18 OCT	HELIOCENTRIC ORBIT					
B KAPPA 1		444	US	27 OCT	131.9	71.47	4209	191		
B LAMBDA 1	EXPLORER 15	445	US	27 OCT	312.2	18.04	17419	307		

OBJECTS IN ORBIT

<u>OBJECT</u>	<u>CODE NAME</u>	<u>CATALOGUE NUMBER</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>NODAL PERIOD</u>	<u>INCLI- NATION</u>	<u>APOGEE Km.</u>	<u>PERIGEE TRANSMITTING Km. FREQ. (MC/S)</u>
1962 LAUNCHES (CONT'D)								
B LAMBDA .2#	ROCKET BODY	NNA	US	27 OCT	INSUFFICIENT OBSERVATIONS			
B MU 1	ANNA 1B	446	US	31 OCT	107.9	50.16	1185	\$162\$324
B MU 2	ROCKET BODY	447	US	31 OCT	107.6	50.17	1166	1074
B NU 3		450	USSR	1 NOV	HELIOCENTRIC ORBIT			
B TAU 1		502	US	13 DEC	109.0	70.35	2135	1067
B TAU 2	INJUN 3	504	US	13 DEC	112.3	70.32	2427	234
B TAU 4		508	US	13 DEC	105.0	70.32	1762	240
B TAU 5		513	US	13 DEC	108.9	70.29	2119	228
B TAU 6		520	US	13 DEC	111.6	70.31	2362	233
B UPSILON 1	RELAY 1	503	US	13 DEC	185.1	47.54	7441	241
B UPSILON 2	ROCKET BODY	515	US	13 DEC	184.9	47.44	7431	1317
B CHI 1	EXPLORER 16	506	US	16 DEC	104.4	52.03	1186	\$136.140;136.620
B PSI 1	TRANSIT 5A	509	US	19 DEC	99.1	90.65	738	1310
B PSI 2		514	US	19 DEC	97.7	90.74	731	743
B PSI 3		519	US	19 DEC	99.1	90.65	733	693
B PSI 4		523	US	19 DEC	100.2	90.49	827	568
1963 LAUNCHES								
1963 03A		527	US	16 JAN	94.5	81.89	522	698
1963 04A	SYNCOM 1	553	US	14 FEB	CURRENT ELEMENTS NOT MAINTAINED			
1963 04B	ROCKET BODY	532	US	14 FEB	CURRENT ELEMENTS NOT MAINTAINED			
1963 05A		533	US	19 FEB	97.7	100.50	796	466
1963 05B		534	US	19 FEB	97.7	100.49	794	503
1963 05C		535	US	19 FEB	96.9	100.49	749	505
1963 05D		536	US	19 FEB	98.3	100.49	833	472
1963 08B		566	USSR	2 APR	BARYCENTRIC ORBIT			
1963 09A	EXPLORER 17	564	US	3 APR	94.7	57.63	757	528
1963 13A	TELSTAR 2	573	US	7 MAY	225.3	42.76	10806	254
								967
								136.050

OBJECTS IN ORBIT											
OBJECT	CODE NAME	CATALOGUE NUMBER	SOURCE	LAUNCH	NODAL PERIOD	INCLI- NATION	APOGEE		PERIGEE		TRANSMITTING FREQ. (MC/S)
							Km.	Km.	Km.	Km.	
1963 LAUNCHES (CONT'D)											
1963 31A	SYNCOM 2	634	US	26 JUL	1438.1	32.54	35863	35788	\$136.980		
									\$136.468\$1814.069;		
									\$1815.794\$1820.177		
1963 31B	ROCKET BODY	625	US	26 JUL	CURRENT	ELEMENTS	NOT MAINTAINED				
1963 38A		669	US	28 SEP	107.1	89.91	1109	1078			
1963 38B		670	US	28 SEP	107.4	89.92	1134	1078			
1963 38C		671	US	28 SEP	107.3	89.92	1132	1078			136.653
1963 38D		672	US	28 SEP	107.3	89.94	1124	1085			
1963 38E		745	US	28 SEP	107.1	89.92	1103	1083			
1963 39A		674	US	17 OCT	6484.7	38.40	116267	101359			
1963 39B		675	US	17 OCT	2319.4	35.90	102372	953			
1963 39C		692	US	17 OCT	6512.1	37.39	115827	102448			
1963 42B		682	US	29 OCT	92.0	89.98	466	278			
1963 43A	POLYOT	683	USSR	1 NOV	102.3	58.92	1400	339			
1963 43B		684	USSR	1 NOV	100.8	58.62	1255	331			
1963 43C		685	USSR	1 NOV	97.7	58.93	1032	295			
1963 43D		686	USSR	1 NOV	100.5	59.77	1227	334			
1963 46A	EXPLORER 18	693	US	27 NOV	5602.3	36.40	192354	3865			136.111
1963 47A	CENTAUR 2	694	US	27 NOV	107.8	30.37	1776	473			
1963 47B		696	US	27 NOV	107.3	30.07	1615	580			
1963 47C		697	US	27 NOV	107.5	30.08	1663	555			
1963 47D		698	US	27 NOV	108.0	29.87	1644	624			
1963 47E		699	US	27 NOV	108.6	30.41	1750	575			
1963 47F		700	US	27 NOV	108.7	30.47	1749	577			
1963 47G		701	US	27 NOV	107.8	30.00	1637	612			
1963 47H		739	US	27 NOV	107.7	30.40	1661	570			
1963 49A		703	US	5 DEC	106.8	89.95	1096	1063			
1963 49B		704	US	5 DEC	107.1	89.95	1126	1064			150;400

OBJECTS IN ORBIT

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1963 LAUNCHES (CONT'D)									
1963 49C		705	US	5 DEC	107.1	89.95	1123	1065	\$54;162;324;648
1963 49D		706	US	5 DEC	107.1	89.97	1098	1085	
1963 49E		715	US	5 DEC	107.1	89.97	1126	1062	
1963 49F		753	US	5 DEC	107.1	89.96	1124	1066	
1963 53A	EXPLORER 19	714	US	19 DEC	115.5	78.63	2346	614	
1963 53B		721	US	19 DEC	115.8	78.63	2390	593	
1963 53C		722	US	19 DEC	115.8	78.59	2385	603	
1963 53D		723	US	19 DEC	115.9	78.62	2398	596	
1963 53E		724	US	19 DEC	115.9	78.64	2374	624	
1963 53F		725	US	19 DEC	115.9	78.64	2399	591	
1963 53G		726	US	19 DEC	115.8	78.61	2375	610	
1963 53H		732	US	19 DEC	115.8	78.60	2393	593	
1963 54A	TIROS 8	716	US	21 DEC	99.4	58.50	756	701	136.233;136.924
1963 54B		717	US	21 DEC	99.3	58.51	751	699	
1963 54C		720	US	21 DEC	101.1	58.49	925	694	
1963 54D		736	US	21 DEC	97.7	58.51	704	592	
1963 55B		719	US	21 DEC	89.3	64.52	243	226	
1964 LAUNCHES									
1964 01A		727	US	11 JAN	103.4	69.93	931	915	
1964 01B	GGSE	728	US	11 JAN	103.4	69.91	932	913	
1964 01C	EGRS	729	US	11 JAN	103.4	69.91	932	912	136.803
1964 01D	SOLAR RADIATION	730	US	11 JAN	103.5	69.91	934	912	136.886
1964 01E		731	US	11 JAN	103.5	69.92	930	915	
1964 02A		733	US	19 JAN	101.3	99.07	850	792	
1964 02B		734	US	19 JAN	101.3	99.07	830	810	
1964 02C		735	US	19 JAN	101.3	99.08	831	812	
1964 03A	RELAY 2	737	US	21 JAN	194.7	46.34	7415	2084	136.620\$136.142

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1964 LAUNCHES (CONT'D)									
1964 03B		738	US	21 JAN	194.8	46.34	7424	2081	
1964 04A	ECHO 2	740	US	25 JAN	108.6	81.50	1182	1146	136.020;136.170
1964 04B		741	US	25 JAN	108.9	81.51	1307	1048	
1964 04C		742	US	25 JAN	108.8	81.49	1305	1044	
1964 04D		743	US	25 JAN	108.8	81.55	1306	1039	
1964 04E		749	US	25 JAN	98.6	81.56	1089	300	
1964 05A	SATURN 5	744	US	29 JAN	93.8	31.45	658	262	
1964 06A	ELEKTRON 1	746	USSR	30 JAN	169.3	60.87	7117	402	
1964 06B	ELEKTRON 2	748	USSR	30 JAN	1356.4	59.38	67744	680	
1964 06C		750	USSR	30 JAN	168.1	60.86	7029	397	
1964 06D		751	USSR	30 JAN	1384.1	59.59	68832	695	
1964 10A	COSMOS 25	757	USSR	27 FEB	90.0	49.07	299	234	
1964 11A		759	US	28 FEB	94.6	82.07	507	496	
1964 11B		760	US	28 FEB	94.1	82.06	475	471	
1964 11C		761	US	28 FEB	94.1	82.08	487	469	
1964 15A	ARIEL 2	771	US/UK	27 MAR	100.8	51.66	1304	287	136.558
1964 15B		775	US/UK	27 MAR	100.5	51.67	1278	284	
1964 15C		847	US/UK	27 MAR	104.0	51.39	1517	371	
1964 16D		785	USSR	2 APR	HELIOCENTRIC ORBIT				
1964 19B	POLYOT 2	784	USSR	12 APR	92.1	58.07	468	289	
1964 26A		801	US	4 JUN	103.1	90.50	951	860	150;400
1964 26B		805	US	4 JUN	103.9	90.20	984	903	
1964 26C		806	US	4 JUN	102.3	90.83	952	787	
1964 26D		809	US	4 JUN	103.1	90.50	952	859	
1964 30A		811	US	13 JUN	91.4	115.00	346	337	

OBJECTS IN ORBIT

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1964 LAUNCHES (CONT'D)									
1964 31A		812	US	18 JUN	101.6	99.81	837	832	
1964 31B		813	US	18 JUN	101.6	99.81	838	833	
1964 31C		815	US	18 JUN	101.6	99.82	839	829	
1964 35A		824	US	2 JUL	94.9	82.08	528	499	
1964 36B		826	US	6 JUL	90.7	92.96	343	279	
1964 38A	ELECTRON 3	829	USSR	10 JUL	168.2	60.82	7026	402	
1964 38B	ELECTRON 4	830	USSR	10 JUL	1313.8	60.24	66204	510	
1964 38C		831	USSR	10 JUL	168.6	60.84	7061	400	
1964 38D		832	USSR	10 JUL	1341.3	60.34	67345	478	
1964 40A		836	US	17 JUL	6021.3	39.39	104409	102107	
1964 40B		837	US	17 JUL	6002.8	40.68	111691	94375	
1964 40C		838	US	17 JUL	2366.2	36.73	104665	217	196.771
1964 41B		843	US	28 JUL	BARYCENTRIC ORBIT				
1964 42A	COSMOS 36	844	USSR	30 JUL	91.5	49.02	435	248	
1964 42B		845	USSR	30 JUL	90.7	48.99	375	233	
1964 45B		851	US	14 AUG	127.3	95.70	3740	275	
1964 46A	COSMOS 38	853	USSR	18 AUG	90.5	56.15	369	178	
1964 46B	COSMOS 39	854	USSR	18 AUG	91.0	56.11	434	190	
1964 46C	COSMOS 40	855	USSR	18 AUG	90.8	56.12	417	193	
1964 46D		856	USSR	18 AUG	93.6	56.16	693	204	
1964 47A	SYNCOM 3	858	US	19 AUG	1436.0	1.04	35927	35641	\$136.470\$136.980 \$7361.30\$1814.05 \$7363.00\$1815.275 \$7361.92\$1814.64
1964 47B		862	US	19 AUG	694.5	16.80			
1964 48A		861	US	21 AUG	91.2	114.98	38084	1113	
1964 49D	COSMOS 41	869	USSR	22 AUG	714.8	65.20	333	326	
1964 49E		898	USSR	22 AUG	715.7	64.97	39741	468	
1964 50A	COSMOS 42	864	USSR	22 AUG	97.4	48.97	39900	355	
1964 50B		866	USSR	22 AUG	97.0	48.99	1036	228	
1964 50C	COSMOS 43	867	USSR	22 AUG	97.3	48.98	993	225	
							1031	226	

OBJECTS IN ORBIT

<u>OBJECT</u>	<u>CODE NAME</u>	<u>CATALOGUE NUMBER</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>NODAL PERIOD</u>	<u>INCLI- NATION</u>	<u>APOGEE Km.</u>	<u>PERIGEE Km.</u>	<u>TRANSMITTING FREQ. (MC/S)</u>
1964 LAUNCHES (CONT'D)									
1964 51A	EXPLORER 20	870	US	25 AUG	103.9	79.90	1020	871	\$136.680\$136.350
1964 51B		871	US	25 AUG	103.9	79.91	1014	871	
1964 51C		873	US	25 AUG	103.7	79.85	997	877	
1964 51D		874	US	25 AUG	103.7	79.83	999	872	
1964 51E		875	US	25 AUG	103.8	79.83	1018	857	
1964 52A	NIMBUS 1	872	US	28 AUG	98.4	98.67	935	429	
1964 52B		878	US	28 AUG	98.4	98.66	925	439	
1964 53A	COSMOS 44	876	USSR	29 AUG	99.5	65.08	864	608	
1964 53B		877	USSR	29 AUG	99.6	65.09	792	687	
1964 54A	OGO I	879	US	5 SEP	3836.5	31.16	152014	394	136.200\$400.250 \$400.850 136.145
1964 60A	EXPLORER 21	889	US	4 OCT	2097.0	33.53	95590	191	
1964 63A		893	US	6 OCT	106.3	89.91	1080	1035	
1964 63B		897	US	6 OCT	106.6	89.91	1084	1056	
1964 63C		900	US	6 OCT	106.6	89.92	1082	1059	
1964 63D		901	US	6 OCT	106.6	89.92	1084	1059	
1964 63E		902	US	6 OCT	106.6	89.94	1076	1065	
1964 63F		903	US	6 OCT	106.6	89.92	1082	1062	
1964 64A		899	US	10 OCT	104.8	79.69	1082	888	136.170
1964 64B		907	US	10 OCT	104.7	79.69	1081	887	
1964 67A	EXPLORER 22	911	US	17 OCT	89.9	74.99	309	176	
1964 68B		914	US	23 OCT	91.1	95.50	344	311	
1964 68C		916	US	23 OCT	90.1	95.54	201	201	
1964 69A	COSMOS 49	913	USSR	24 OCT	91.9	48.95	472	260	
1964 69B		915	USSR	24 OCT	91.8	48.94	467	257	
1964 69C		917	USSR	24 OCT	91.4	48.94	410	253	
1964 70A	COSMOS 50	919	USSR	28 OCT	88.7	51.24	232	190	
1964 70B		920	USSR	28 OCT	88.9	51.25	241	201	

DECAYED OBJECTS

PLEASE ADD THE FOLLOWING TO THE DECAY OBJECTS LIST:

<u>OBJECT</u>	<u>CODE NAME</u>	<u>CATALOGUE NUMBER</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>DECAY</u>
1962 A-UPSILON		385	US	01 SEP	26 OCT 64
1964 28A	COSMOS 31	803	USSR	06 JUN	20 OCT 64
1964 61A		890	US	05 JUN	26 OCT 64
1964 65B		905	USSR	12 OCT	20 OCT 64
1964 66A	COSMOS 48	908	USSR	14 OCT	20 OCT 64
1964 66B		909	USSR	14 OCT	28 OCT 64
1964 66C		910	USSR	14 OCT	16 OCT 64
1964 68A		912	US	23 OCT	28 OCT 64
1964 68D		918	US	23 OCT	29 OCT 64

* APHELION PERIHELION IN ASTRONOMICAL UNITS, INCLINATION TO ECLIPTIC.
 ** TWO HUNDRED AND FOUR METAL OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH
 1961 OMICRON 1 AND 1961 OMICRON 2. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE
 FOUND IN THE DECAYED OBJECTS LIST.
 \$ TRANSMITTING ON COMMAND ONLY.
 & TRANSMITTING WHEN IN SUNLIGHT ONLY.
 # NO CATALOGUE NUMBER ASSIGNED.